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EXAMINER
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/642,872  
Filing Date: August 18, 2003  
Appellant(s): BUSWELL ET AL.

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Petar Kraguljac  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed February 16, 2007 appealing from the Office action mailed June 13, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,441,593	Baughman et al	8-1995
6,745,469 B1	Soik et al	6-2004

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

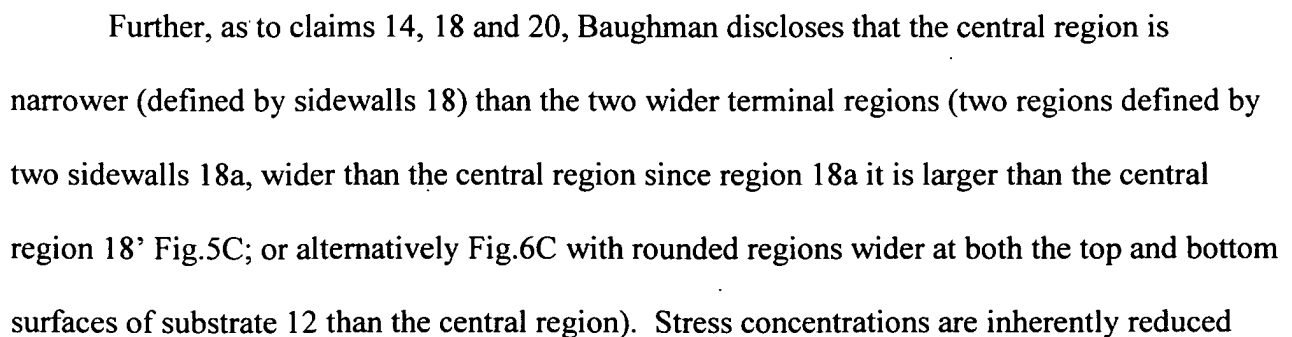
**Claims 1-3, 6-7 and 10-12, 14, 17-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Baughman et al (US 5,441,593).**

Baughman discloses a method comprising:

forming a slot 18 into a substrate 12, the slot extending along a long axis and being defined, at least in part, by a pair of sidewalls 18' which extend generally parallel to the long axis (Fig.5A); and,

forming at least one bowl-shape 18a into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot (Fig.5C and Fig.1, as broadly interpreted, the end of the slot is shown as that at the upper end of the slot intersecting the top surface).

Further, as to claims 1 and 10, Baughman discloses that the slot extends between a first substrate surface and a generally opposing second substrate surface (the top and bottom surfaces, Figure 5C) and that the slot extends along a long axis that extends generally parallel to the first substrate surface (the long axis is not shown in Figure 5C, but rather extends into and out of the page; Figures 1-3 show the long axis).



since the slot is rounded and does not comprise sharp corners. Rounding is shown in Figures 5C and 6C.

**Claims 1-4, 6-7, 10-12, 14-18, 20-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Soik et al (US 6,745,469 B1).**

Soik discloses a method comprising:

forming a slot 308 into a substrate 302, the slot extending along a long axis and being defined, at least in part, by a pair of sidewalls 400 which extend generally parallel to the long axis (Fig.21; Fig.14, 22-16 also show sidewalls generally parallel to the long axis); and,

forming at least one bowl-shape 310 into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot (Fig.14, 21).

Further, as to claim 1, Soik discloses that the slot extends between a first substrate surface and a generally opposing second substrate surface (the top and bottom surfaces of the substrate) and along a long axis which lies generally parallel to the first substrate surface (not shown in Figure 21 since it extends into and out of the page).

As to claim 2, Soik discloses forming the bowl shape into a first surface 304 of the substrate, wherein the width at the first surface is greater than a width between the sidewalls (Fig.21).

As to claims 3-4, Soik discloses to use a drill bit (col.10, line 51), laser machining, etching or a method of mechanically removing (col.14, lines 38-42).

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As to amended claim 20, as broadly interpreted, Soik discloses the same relative dimensions since as cited since the slot has a central region and wider terminal regions.

Figures 12-13, 15-20 disclose various blending or rounding methods for forming the slot.

**Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soik et al (US 6,745,469 B1).**

The discussion of Soik from above is repeated here.

As to claims 5 and 8, Soik does not disclose a required order of the process steps. The performance of two steps simultaneously, which have previously been performed in sequence was held to have been obvious. *In re Tatincloux* 108 USPQ 125 (CCPA 1955). It would have been obvious to one with ordinary skill in the art to conduct the steps as cited, since the same end product occurs, and conducting them concurrently saves time, and conducting them in a particular order allows for optimizing the processes for best results used to form each opening when the processes are different.

#### **(10) Response to Argument**

##### **I. Baughman et al**

Appellant argues on pages 11-12 about the terms “terminal regions” and “end of the slot,” for example as it relates to how ink flows through the device, interpretation consistent with the claim language as a whole and about broadest reasonable interpretation consistent with the specification. In response, the claim is not limited to an ink flow device, therefore arguments about the final intended use (ink flow) of the product are not persuasive. The claims simply cite

how to form a slot in a substrate, not how ink flows through the slot. Below is appellant's claim

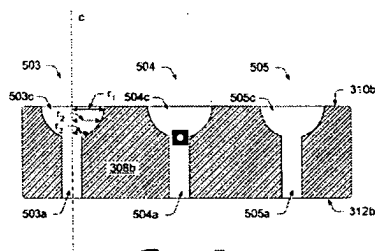
1:

Claim 1. A method comprising:

forming a slot into a substrate and extending between a first substrate surface and a generally opposing second substrate surface, the slot extending along a long axis that extends generally parallel the first surface and being defined, at least in part, by a pair of sidewalls which extend generally parallel to the long axis; and

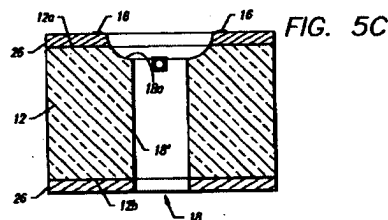
forming at least one bowl-shape into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot.

From Appellant's specification:



*Fig. 5c*

From Baughman:



*FIG. 5C*

Paragraph [0041] describes Fig.5c, a cross-sectional view, generally transverse a long axis of an individual slot (503, 504, 505) and orthogonal to first surface 310b; terminal regions 503c, 504c, 505c

Claim 1 cites a "long axis that extends generally parallel the first surface." Both appellant's specification and Baughman have a similar figure in which the long axis is not shown but can be drawn in as extending in and out of the page. The axis is marked by a "c" symbol in the figures above.



Claim 1 also cites that the long axis is defined by the sidewall. In both appellant's specification and Baughman, the sidewalls and the cited long axis extend in and out of the page in planes parallel to each other.

Claim 1 also cites that the long axis passes through the bowl-shaped terminal region at the end of the slot. Fig.5c of both appellant and Baughman above show a bowl-shaped region at the end of the slot, the bowl-shaped region being formed at the top surface of the substrate and thus at the end of the slot. When looking at the shape of the slot in the transverse cross-sectional view of Fig.5C, one sees that the slot has two ends, one at the top surface and one at the bottom surface. The bowl-shaped region is at one end of the slot.

Examiner notes that appellant is arguing that the end of the slot is defined as shown in Fig.5a, wherein the bowl-shaped portion is not across the entire top surface of the substrate, but rather is only in one specific region of the slot. However, the claims have open "comprising" language and do not define where the end of the slot is, and further do not limit that the bowl-shaped region cannot be formed at the entire top surface of the substrate. The claims also do not define that a central region of the slot is contiguous with the top surface of the substrate. Thus, the entire top surface of Baughman, including terminal and central regions as interpreted by appellant, has a bowl-shaped region, which reads on the open claim language.

On page 11 of the arguments, appellant argues about the manner in which ink flows through the product of Baughman. These arguments are not persuasive because the claims are directed to a method of making a slot, not how to use the slot.

On page 12 of the arguments, appellant argues that the interpretation is not consistent with the claim language as a whole. In response, the gist of the claim is to make a slot with a

bowl-shaped region at the end of the slot, as Baughman discloses. The claim does not have any language to reflect ink flow, which could alter the interpretation of the claim as a whole to include how ink flows through the bowl-shaped terminal region. The claim is simple – form a slot with sidewalls and then form a terminal region. Baughman forms a slot with sidewalls that extends between opposite surfaces of the substrate, and then at one end of the slot forms a terminal region (or as in appellant's interpretation, the entire top surface of the slot --including a terminal region—has a bowl-shaped region, as defined by Fig.5a).

On page 12, appellant also argues about the examiner giving the claims their “broadest reasonable interpretation” consistent with the specification. In response, the interpretation is consistent with the specification because the two figures are almost identical to each other in cross section, as shown in the figures 5c above. As noted above, examiner is not allowed to import limitations from the specification into the claim, such as defining where the central region of the slot is.

On page 12, appellant also argues about a meaning that one of ordinary skill in the art would construe. In response, one of ordinary skill in the art would construe that if a slot extends between a top surface and a bottom surface of the substrate, that there are two end regions at the opposing top and bottom surfaces, and a central region in between the end regions. If a slot extends between two opposing surfaces, then the central region of the slot is expected to be half way between the two opposing surfaces with end regions at the opposing surfaces. This plain language-interpretation of the claim language is disclosed by Baughman.

Furthermore, the bowl-shaped region in Baughman extends across the entire top surface of the substrate, and thus even if examiner interprets “terminal” as in Fig.5a of the specification,

Baughman also has a bowl-shaped region at the terminal region of the slot (and also at the central region).

As to claim 20, examiner notes that the claim does not cite that the central region is contiguous with the top surface of the substrate, as an interpretation of Fig.5a would dictate.

Rather, claim 20 cites that:

...the central region extending between a first substrate surface and a generally opposing second substrate surface...

A region that extends between the top and bottom surface is expected to be in central relationship to the top and bottom surfaces. Claim 20 is also different than claim 1 because it does not cite that the terminal regions are at the end of the slot.

...forming two terminal regions of the slot into the first surface generally contiguous with and interposed by the central region...

Thus, in between the terminal regions is a central region that touches the terminal regions. Again the terminal regions in Baughman extend across the top surface, and touch central regions since the bowl-shaped region touches the central region.

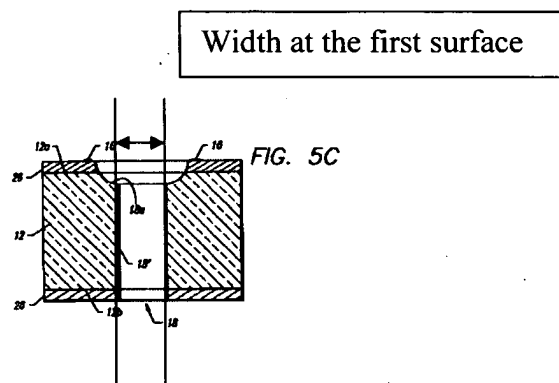
The bowl-shaped region (across the entire top surface of the substrate, including terminal regions of the slot) of Baughman, also extends between the top and bottom surfaces of the substrate since the bowl is formed into the substrate.

Further, the width of the central region is defined by the sidewalls. This width is constant since the sidewalls have a constant width, and the width when taken at the top surface is less than the width of the bowl-shaped terminal regions.

On page 14, appellant argues that Baughman does not depict in the Figures the terminal regions. In response, it is expected that the terminal regions would be the same all along the top

surface because an alternate processing step for the regions is not disclosed, and extra steps to form different shaped regions would be disclosed if they were different.

On page 14, appellant argues about the width “at the first surface.” In response, claim 20 does not cite that the central region is contiguous with the first surface, rather it extends between the first and second opposing surfaces. Thus the width at the first surface is the same width that it is everywhere, as defined by sidewalls 18’.



As to claim 10, appellant argues about the width of the terminal region and central region. Baughman depicts in the figures that the width of the central region, as shown above, is less than the terminal region.

As to claims 14 and 18, appellant argues about the side walls of the slot not being at the first surface. However, the central region is not cited to be contiguous with the first surface. A cross section taken at the first surface has a central region with a smaller width as shown in the Fig.5c.

## II. Soik et al

The arguments about Soik are essentially similar to the arguments about Baughman, since both Soik and Baughman have the same cross-sectional shape of a slot. Therefore, the

arguments cited above for Baughman are repeated for Soik. Examiner's response is again, that claim 1 does not cite that the central region is contiguous with the first surface, and thus the central region is within the substrate, and meets the claim limitations. Measuring the width at the first surface is not the same as having the central region being contiguous with the top surface, and the claims do not cite that the central region is contiguous with the first surface.

On page 20, appellant argues that Soik is non-analogous art. In response, the claims do not cite the purpose for the slot, and at most cite that the slot is for fluid flow. Thus, a method of forming a slot as disclosed by Soik is relevant because the same technique is used to form the slot for fluid to flow through. The claims are not limited to a particular size of the slot, for example, they do not cite that the slot is for an inkjet printhead, nor do they even cite a semiconductor process. Soik uses the same technique of using a drill bit (col.10, line 51), laser machining, etching or a method of mechanically removing (col.14, lines 38-42).

On pages 20-21, appellant argues about the level of ordinary skill in the art. The claims are directed to forming a slot by mechanical and chemical techniques. The level of skill would be that of knowing how to form slots by drilling, laser machining, or etching. Soik is at this minimum level.

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Art Unit: 1765

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For the above reasons, it is believed that the rejections should be sustained.

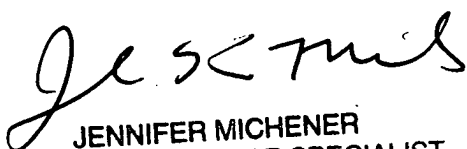
Respectfully submitted,

/Anita Alanko/

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